

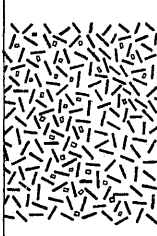
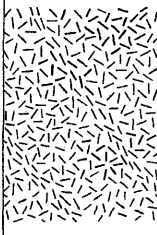


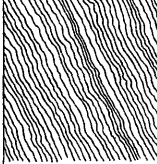
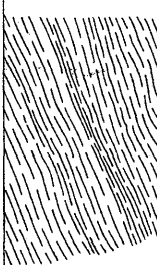


COLUMNAR SECTIONS

GENERALIZED SECTION FOR ASHEVILLE QUADRANGLE NORTH AND WEST OF HOT SPRINGS.						
SCALE: 1 INCH = 1000 FEET.						
SYSTEM.	FORMATION NAME.	SYMBOL.	COLUMNAR SECTION.	THICKNESS IN FEET.	CHARACTER OF ROCKS.	CHARACTER OF SOILS AND SURFACE.
ORDOVICIAN	Athens shale.	Oa		300+	Light-blue calcareous shale. Black carbonaceous shale.	Belts of low knobs. Open valleys.
	Knox dolomite.	€Ok		3500±	Magnesian limestone—light blue, dark blue, and white—with nodules of chert.	Broad ridges and irregular, rounded hills.
	Nolichucky shale.	€n		450-500	Yellow, red, and brown calcareous shale, with a few limestone beds.	Narrow valleys and steep slopes of Knox dolomite ridges.
	Honaker limestone.	€hk		100+	Massive blue and gray limestone and banded limestone.	Narrow valleys.
CAMBRIAN	Watauga shale.	€w		600+	Purplish, reddish-brown, and yellow shales, sandy shales, and thin sandstones.	Lines of round hills and knobs. Sandy and clayey soils, red-dish and purplish.
	Shady limestone.	€sh		800-950	Gray, bluish-gray, mottled gray and white limestones, with nodules and masses of chert.	Valleys and low hills. Deep clay soils, dark red and cherty.
	Hesse quartzite.	€h		700-1200	Massive white quartzite and sandstone.	High, sharp mountains and peaks. Thin, sandy, and rocky soils.
	Murray slate.	€mr		300-450	Bluish-gray and gray, argillaceous and sandy shales and slates, with thin sandstones.	Depressions and slopes of quartzite mountains. Light, sandy soils.
	Nebo quartzite.	€nb		350-1700	Massive white quartzite and sandstone.	High, sharp mountains, with many cliffs. Thin, sandy, and rocky soils.
	Nichols slate with quartzite lentil.	€nc		200-600 250-700 300-800	Bluish-gray and gray argillaceous and sandy shales and slates, with thin sandstone layers. Massive white quartzite and sandstone. Bluish-gray and gray argillaceous and sandy shales and slates, with thin sandstone layers.	Depression between quartzite crests. Light, sandy soils. Sharp mountains and knobs. Thin, sandy, and rocky soils. Depressions between quartzite crests. Light, sandy soils.
	Cochran conglomerate.	€ch		300-2500	Massive quartz conglomerate, light gray and dark gray, with seams of dark slate.	High mountains and ridges. Thin, rocky, and sandy soils.
	Hiwassee slate.	€hi		900-1500	Blue, black, gray, and banded slates and a little otterite and mica-schist. Includes layers of coarse sandstone and quartzite, and beds of limestone, calcareous sandstone, and conglomerate.	Slopes of conglomerate mountains, and low, hilly ground. Thin, clayey or sandy soils.
	Snowbird formation.	€sb		350-5000	Gray and white feldspathic quartzite and sandstone, with many layers of dark slate, especially near the middle, and numerous cross-bedded layers throughout. Includes some quartz conglomerate at the top, and coarse quartz conglomerate and red or gray arkose at the base.	High, irregular mountains, ridges, and knobs, with round summits. Thin, sandy, and rocky soils.
	UNCONFORMITY					
ARCHEAN	Gneisses, granites, and ancient volcanic rocks.				Descriptions given in accompanying table.	Descriptions given in accompanying table.

GENERALIZED SECTION FOR ASHEVILLE QUADRANGLE IN VICINITY OF CRABTREE.						
SCALE: 1 INCH = 1000 FEET.						
SYSTEM.	FORMATION NAME.	SYMBOL.	COLUMNAR SECTION.	THICKNESS IN FEET.	CHARACTER OF ROCKS.	CHARACTER OF SOILS AND SURFACE.
CAMBRIAN	Nantahala slate.	€nt		700+	Black and gray slate and mica-schist and black-banded otterite- and garnet-schist, with some staurolite schist.	Depressions and low spurs of graywacke and conglomerate mountains. Thin, micaceous and sandy soils.
	Great Smoky conglomerate.	€gs		750±	Gray feldspathic quartzite, graywacke, and some conglomerate, with beds of gray mica-schist and slate.	High mountains and peaks, with cliffs. Thin, rocky, micaceous and sandy soils.
	Hiwassee slate.	€hi		450-1000	Gray and black mica-schist, garnet-schist, and otterite-schist, with interbedded layers of graywacke.	Depressions and low hills. Thin sandy and micaceous soils.
	Snowbird formation.	€sb		0-50	White feldspathic quartzite.	Low hills.
ARCHEAN	Gneisses and granites.				Descriptions given in table below.	Descriptions given in table below.

GENERALIZED TABLE OF IGNEOUS AND METAMORPHIC ROCKS, ACCORDING TO AGE.					
SYSTEM.	FORMATION NAME.	SYMBOL.	COLUMNAR SECTION.	CHARACTER OF ROCKS.	CHARACTER OF SOILS AND SURFACE.
ALCONKIAN	Metarhyolite.	Amr		Black metarhyolite-schists.	Effect on topography and soil not appreciable.
	Metadiabase.	Amd		Dull yellowish-green altered diabase, in part coarsely crystalline.	Minor depressions. Deep clay soils.
ARCHEAN	Max Patch granite.	Amrp		Very coarse biotite-granite, usually massive, but in places porphyritic and altered to augen-gneiss. Colors usually light gray in the eastern areas and reddish in the western.	High, irregular mountains with steep slopes and broad, round summits. Red and brown clayey soils, with many ledges.
	Cranberry granite.	ArCb		Biotite granite and granite-gneiss, coarse and fine; colors, light gray, dark gray, and white. Includes dikes of schistose and unaltered diabase, fragments of hornblende-gneiss, and dikes of unaltered, fine biotite-granite.	High, irregular mountains, peaks, and spurs, with round summits. Red and brown clayey soils, with many ledges.
	Soapstone, dunite, and serpentine.	ArS		Dunite, in part serpentinized. Soapstone contains talc and tremolite.	Yellow clay soils, with many ledges and fragments of rocks.
	Metagabbro.	ArmG		Dark-green and black, massive metagabbro.	Broad, round hills. Dark-red and brown clay soils.
	Roan gneiss.	ArR		Hornblende-gneiss and schist, with some massive and schistose diorite. Includes many beds of mica-gneiss, mica-schist, and hornblende-mica-gneiss, and dikes of altered and unaltered biotite-granite.	Broad plateau surfaces or depressions in Carolina gneiss ridges. Dark-red and brown clay soils.
	Carolina gneiss.	ArC		Interbedded mica-gneiss and mica-schist, coarse and fine, bluish gray and gray. Contains many small beds of hornblende-gneiss, large bodies of garnet-schist and kyanite-schist, and dikes of biotite-granite, both altered and unaltered.	Ridges, peaks, spurs, and high mountains with irregular crests. Red and brown micaceous and clayey soils.

NAMES OF FORMATIONS.

SYSTEM.	ARTHUR KEITH: KNOXVILLE FOLIO, U. S. GEOLOGICAL SURVEY, 1895.	NAMES AND SYMBOLS USED IN THIS FOLIO.	ARTHUR KEITH: CRABTREE FOLIO, U. S. GEOLOGICAL SURVEY, 1903.
ORDOVICIAN	Athens shale.	Athens shale.	Oa
	Knox dolomite.	Knox dolomite.	€Ok
	Nolichucky shale.	Nolichucky shale.	€n
	Maryville limestone.	Honaker limestone.	€hk
CAMBRIAN	Rogersville shale.	Watauga shale.	€w
	Rutledge limestone.	Shady limestone.	€sh
	Rome, Beaver, Apison formations.	Hesse quartzite.	€h
		Murray slate.	€mr
		Nebo quartzite.	€nb
		Nichols slate.	€nc
		Nantahala slate.	€nt
		Cochran conglomerate.	€ch
		Great Smoky conglomerate.	€gs
		Sandsuck shale.	€hi
ARCHEAN		Snowbird formation.	€sb
		Max Patch granite.	Amr
		Cranberry granite.	Arb
		Metagabbro.	Arm
		Roan gneiss.	Ar
		Carolina gneiss.	Ar

ARTHUR KEITH,
Geologist.